



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Rose
2-21-01

In Re Application of:

Date: February 5, 2001

Anderson

Serial No.: 08/702,286

Group Art Unit: 2712

Filed: August 23, 1996

Examiner: Harrington, A.

For: A METHOD AND SYSTEM FOR GROUPING IMAGES IN A DIGITAL
CAMERA

DECLARATION UNDER 37 C.F.R. 1.131

I, Eric C. Anderson, hereby declare that:

1. I am the inventor of the subject matter recited in the claims of the above-identified application.
2. Prior to December 22, 1995, I conceived of the idea of providing a digital camera interface that includes a mark function for allowing a user to mark randomly chosen images to create a temporary group of images for collective manipulation.
3. I conceived of this idea while working for Apple Computer, Inc., in Cupertino, CA, as System Architect for Apple's next generation software architecture for image capture devices, code-named "FlashPoint".

4. Attached as Exhibit A are pages 1 and 3 of a document dated March 18, 1993 that I prepared entitled "Adam User Interface State Table," showing the functions assigned to function keys displayed on a camera when the camera is placed in various states. Page 3, State Number 5, and page 8, Level #1 describe components of a camera user interface, including the function of the "Mark" key, which operates in accordance with my invention, as described and claimed in the present application.
5. Attached as Exhibit B are 3 pages of a document dated March 31, 1993, entitled "Script of background ID 8642 - "select screen" listing script programming code for implementing the select screen of the camera user interface, including the Mark function, as described in the document of Exhibit A.
6. Attached as Exhibit C are pages 1 and 3 of a document dated April 15, 1996 that I prepared summarizing inventions conceived for the FlashPoint project. On page 3, the second paragraph from the bottom is labeled "Method for Creating a Slide Show from a Series of Images", which sets forth a description of my invention, as described and claimed in the present application.
7. Attached Exhibit D is a letter dated August 8, 1996 from outside counsel to Eric Anderson enclosing a second draft of the present application for review. During the course of preparing the present application, the title of the invention had been changed to "A Method And System For Grouping Images In A Digital Camera."



signed-page.jpg (1670x2162x24b jpeg)

8. On August 23, 1996, the present patent application describing and claiming my invention was filed.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

E. C. Anderson
Eric C. Anderson

2/2/01
Date

P110/553CPA



Adam User Interface State Table

March 18, 1993

Eric C. Anderson

State Number 1
State Name Power Off
Display mode off
Function Keys none
Power On goto 2: Viewfinder

State Number 2
State Name Viewfinder
Display mode Live Video
Function Keys *flash, Exposure, Focus*
Menu <Flash, Exposure, Focus> (toggle)
Record Start/Stop audio recording (one recording can be several non-contiguous pieces)
Single mode: recording is appended to single image.
Continuous mode: recording and sequence of images is combined into a live sequence frame
Movie mode: recording is soundtrack to movie
Select If recording, stop. Take image(s) and/or sound in current format (single, continuous, movie, just sound or nothing) and goto 5: **Select**
Photo If in Single mode, goto 6: **Single Photo**
 If in Continuous mode, take picture, hold on screen for .2 seconds. If sound is being recorded, remember time of photo for live sequence. Return to live viewfinder
 If in Movie mode, begin movie and sound capture and goto 7: **Movie Record**
Preferences <Images, Sounds, Other> (toggle)
Flash Turns flash on/off (flash icon is ON for on, or blinking or OFF for off. Blinking flash icon means light level too low for highest quality picture)
Exposure <Darker, Auto, Lighter> (toggle) If you turn it off, it reverts to auto exposure.
Focus Selects one of N focus zones. Zone is highlighted when selected (other zones are very dim - barely visible). Zone changes from Red highlight to Green highlight when in focus.
Images <Single, Continuous, Movie>

EXHIBIT A

Sounds <User, Mono, Stereo>
Other Future
Single Selects Single mode (icon = slide: show icon in upper right viewfinder when menu is up); return to normal viewfinder
Continuous Selects Continuous mode (icon = movie strip: show icon in upper right viewfinder when menu is up); return to normal viewfinder
Movie Selects Movie mode (icon = movie camera: show icon in upper right viewfinder when menu is up)
Goto 3: **Movie Size**
Darker Drops exposure 1/2 stop
Auto Returns to auto setting
Lighter Increases exposure 1/2 stop

State Number 3
State Name **Movie Size**
Display mode Show rectangle of current size (1/2 to 1/16) plus prompt "Select Movie Image Size". Also show how many frames can be stored with currently available resources
Function Keys <Smaller, OK, Larger>
Menu beep
Record beep
Select beep
Photo beep
Preferences beep
Smaller Show next lower size, or beep if at smallest
OK Save selection and goto 4: **Movie Rate**
Larger Show next larger size, or beep if at largest

State Number 4
State Name **Movie Rate**
Display mode Show current rate, plus how many long a movie can be created with current resources (show both # of frames plus seconds of movie length). Also, prompt "Select Movie Frame Rate"
Function Keys <Slower, OK, Faster>
Menu beep
Record beep
Select beep
Photo beep
Preferences beep
Slower select next slower rate or beep if at slowest rate

EXHIBIT A

OK Save selection and goto 2: **Viewfinder** (note: you could add another step here - **Movie Quality** - if desired)
Faster select next faster rate or beep if at fastest rate

State Number 5

State Name **Select**

Display mode 9-up display, with current selection highlighted with box.
 Note if this is from power-up and no picture has been taken, you are at the beginning of the list

Function Keys <Mark, View, Goto>

Menu <Move, Group, Delete> (toggle)

Record If a Group is selected, Goto 8: **Narrate Sequence**
 Else, Goto 9: **Add Narration**

Select Move selection rectangle around (left, right, up, down) If user presses up or down rapidly, go up/down by screenful

Photo Discard any selection and Goto 2: **Viewfinder**

Preferences Discard any selection; Goto 10: **ViewBy**

Mark If current selection is not marked, mark and number it
 If current selection is marked, unmark and renumber

View If a selection has been marked, Goto 11: **View Group**
 If no selection has been marked:
 If current frame is a single image, Goto 12: **View Single**
 If current frame is a Group, Goto 11: **View Group**
 If current frame is a Movie, goto 15: **View Movie**
 If current frame is sound only, goto 16: **View Details**

Goto <First, Cancel, Last>

Move Goto 13: **Move Selection**

Group Create a new frame, link to selected group of frames, and store at end of list. Return to Select state with normal function keys <Mark, View, Goto>

Delete Goto 14: **Delete Selection**

First Move to first frame in file, restore <Mark, View, Goto>

Cancel restore <Mark, View, Goto> functions

Last Move to last frame in file, restore <Mark, View, Goto>

State Number 6

State Name **Single Photo**

Display mode Hold captured image on-screen. Prompt "press Record to complete frame" Show elapsed time of audio, maybe even VU meter along bottom

Function Keys none

Menu no action (no beep - it will ge recorded)

EXHIBIT A

Record Complete audio recording. Current image and recording are combined, become current selection. Goto 5: **Select**
Select no action
Photo no action
Preferences no action

State Number 7
State Name **Movie Record**
Display mode Live viewfinder at selected frame rate. A very small green bar turns red at bottom of screen, indicating how much of available storage is used. If storage runs out, it acts as if the user has pressed the Photo button
Function Keys none
Menu no action (don't beep - it will record it)
Record no action
Select no action
Photo ends movie recording: movie and sound are combined into a frame and become current selection. Goto 5: **Select**
Preferences no action

State Number 8
State Name **Narrate Sequence**
Display mode 3-up, where the center image is the current image, and the previous and next images can be seen. Note that at the beginning, there is no image on the left, and at the end, there is no image on the right. Prompts are as follows: "Press Record to begin narration", then "Press Photo to move to next image", then "Press Record to end narration".
Function Keys <blank, Cancel>
Menu no action
Record Starts & Stops narration (see Display Mode). When narration is completed, a new frame is generated, which includes the list of images, the narration, and the timing. Goto 5: **Select** with this new frame, at the end of the file, selected. Group selection is discarded.
Select no action
Photo Sequences images (see Display Mode)
Preferences no action
Cancel Goto 5: **Select** with group still selected

EXHIBIT A

State Number 9
State Name Add Narration
Display mode
Function Keys
Menu
Record
Select
Photo
Preferences

State Number 10
State Name ViewBy
Display mode
Function Keys
Menu
Record
Select
Photo
Preferences

State Number 11
State Name View Group
Display mode
Function Keys
Menu
Record
Select
Photo
Preferences

State Number 12
State Name View Single
Display mode 1-up display:
Single image: show image full screen
Function Keys <Previous, Details, Next>
Menu <Previous, Details, Next>
Record Goto 9: Add Narration
Select Goto 5: Select
Photo Goto 2: Viewfinder
Preferences Future

5

EXHIBIT A

Previous backup to previous frame.
If previous frame is a single image, Goto 12: **View Single**
If previous frame is a Group, Goto 11: **View Group**
If previous frame is a Movie, goto 15: **View Movie**
If previous frame is sound only, goto 16: **View Details**
Details Goto 16: **View Details**
Next Backup to previous frame.
If previous frame is a single image, Goto 12: **View Single**
If previous frame is a Group, Goto 11: **View Group**
If previous frame is a Movie, goto 15: **View Movie**
If previous frame is sound only, goto 16: **View Details**

State Number 13
State Name **Move Selection**
Display mode 9-up, with blinking insertion bar
Function Keys <Insert, Cancel, Goto>
Menu beep
Record beep
Select move insertion bar up/down/left/right, including page-up and page-down functions
Photo beep
Preferences beep
Insert move selection to insertion point, Goto 5: **Select** with first frame of selection selected. Moves a marked group (and unmarks the group) or moves the current selection
Cancel Goto 5: **Select** with last marked frame selected.
Goto <First, Cancel, Last>
First Goto 5: **Select** with first frame in file selected (but not selected)
Last Goto 5: **Select** with last frame in file selected (but not marked)

State Number 14
State Name **Delete Selection**
Display mode 9-up, with last marked frame (and any other marked frames that are within the 9-up window) with a blinking red X through them. When entering this state, make a special WarningBeep
Function Keys <Confirm, Cancel>
Menu beep
Record beep
Select beep
Photo beep

EXHIBIT A

Preferences beep
Confirm Delete selection and Goto 5: **Select** with next frame after
last marked frame selected
Cancel Goto 5: **Select** with last marked frame selected

State Number 15
State Name View Movie
Display mode
Function Keys
 Menu
 Record
 Select
 Photo
 Preferences

State Number 16
State Name View Details
Display mode
Function Keys
 Menu
 Record
 Select
 Photo
 Preferences

State Number
State Name
Display mode
Function Keys
 Menu
 Record
 Select
 Photo
 Preferences



EXHIBIT A

Adam Select Functions

Level #1

<Mark (UnMark), View (Review), GoTo (UnGoTo)>

Mark puts a number on the cell, makes a sound. Becomes **UnMark**. If you move selection rectangle to an unmarked cell, function is **Mark**. If to a marked cell, function is **UnMark**.

View takes you to 1-up display (for image cells). Function is **Review** for sound only cells, and takes you to the Details display.

GoTo brings up another menu: **<First, Marked, Last>**. If you press either **First** or **Last**, you go to the first or last cell in the file, and return to the normal functions **<Mark, View, UnGoTo>** where **GoTo** becomes **UnGoTo**. Any change in the selection or function executed changes **UnGoTo** to **GoTo**.

If you press **Marked**, the functions become **<Previous, Next, Done>**, where you have gone to the last item marked, and you can go backward or forward through the marked items. **Done** gets you out (so does **Menu**)

Level #2

<Group (UnGroup), Move (UnMove), Delete (UnDelete)>

The **Group** function creates a new cell at the end of the file, and puts all the selected (marked) cells into it, and removes the individual cells from the file. The user will not be allowed to make a selection with two labels - a warning will be given that two labels are not allowed. The user must unlabel one of the cells first. Once a group cell has been made, the user can **UnGroup** until the point where another function is executed.

Move takes all the marked cells and puts them in the same (sequential) location with the first cell marked. It then becomes **UnMove**, and remains until a new function is used.

Delete deletes the current selection or the marked selection, and becomes **UnDelete** until a new function is used.

Level #3

<Duplicate, Label (UnLabel), ViewBy>

Duplicate allows the user to explicitly make copies of cells - if space permits. This allows using same image or sound in several places. There are no implicit copies - this gets around the disk space reclamation

EXHIBIT A

problem. Marked cells or current cell is used. No **UnDo** - user must reselect and delete.

Label is shown if current cell is unlabeled, otherwise the function is **UnLabel**. If a selection is marked, this function performs a **Group** followed by a **Label** function. Labeling takes a user-selected label from a list (built-in, but extensible by the user by uploading from his PC) and put it on a cell. Only one label per cell is allowed. Pressing **Label** gives you 3x3 grid of available labels in alphabetical order. Use the **Select** keys to select the label. Functions are <**Use, Cancel**>

ViewBy allows you to view the file by <**date, kind, order**>.

3/31/93 5:08 PM

Script of background id 8642 = "Select_Screen"

1

```

on doMark
  global marks, select, markpos, unmarkno, memory, memory2
  if visible of bkgnd btn "mark" then
    if marks = 0 then
      put 1 into marks
      put 1 into line select of memory
      show bkgnd btn "1" at markpos
    else if marks = 1 then
      put 2 into marks
      put 2 into line select of memory
      show bkgnd btn "2" at markpos
    else if marks = 2 then
      put 3 into marks
      put 3 into line select of memory
      show bkgnd btn "3" at markpos
    else if marks = 3 then
      beep
      exit doMark
    end if
    put markpos into line select of memory2
    hide bkgnd btn "mark"
    show bkgnd btn "unmark"
  else -- UNMARK function
    if line select of memory = 1 then
      hide bkgnd btn "1"
      put 1 into unmarkno
    else if line select of memory = 2 then
      hide bkgnd btn "2"
      put 2 into unmarkno
    else if line select of memory = 3 then
      hide bkgnd btn "3"
      put 3 into unmarkno
    end if
    put (marks - 1) into marks
    put "" into line select of memory
    hide bkgnd btn "unmark"
    show bkgnd btn "mark"
    if marks > 0 then
      send renumber
    end if
  end if
end doMark

```

```

on Renumber
  global select, marks, memory, markpos, unmarkno, memory2
  if marks = 2 then -- do 3 marks to 2 renumber case
    hide bg btn "3"
    if unmarkno = 1 then -- X23 case - renumber 2 & 3
      repeat with i = 1 to 9
        if line i of memory = "2" then
          show bg btn "1" at (line i of memory2)
          put 1 into line i of memory
        else if line i of memory = "3" then
          show bg btn "2" at (line i of memory2)
          put 2 into line i of memory
        end if
      end repeat
    else if unmarkno = 2 then -- 1X3 case - renumber 3
      repeat with i = 1 to 9 -- find 3 and renumber to 2
        if line i of memory = "3" then
          show bg btn "2" at (line i of memory2)
          put 2 into line i of memory
        end if
      end repeat
    end if
  end if

```

EXHIBIT B

3/31/93 5:08 PM Script of background id 8642 = "Select_Screen"

2

```
end repeat
else if unmarkno = 3 then -- 12X case - do nothing
end if
else -- do 2 marks to 1 renumber case
hide bg btn "2"
if unmarkno = 1 then -- X2 case - renumber 2 to 1
repeat with i = 1 to 9
if line i of memory = "2" then
show bg btn "1" at (line i of memory2)
put 1 into line i of memory
end if
end repeat
else if unmarkno = 2 then -- 1X case - do nothing
end if
end if
end renumber
```

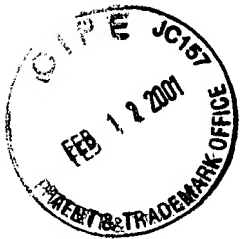


EXHIBIT B

3/31/93 5:09 PM

Script of card id 8780 = "Select"

1

```
on opencard
  global storage, level, marks, memory
  show bkgnd btn "mark"
  hide bkgnd btn "UnMark"
  show bkgnd btn "view"
  hide bkgnd btn "Review"
  show bkgnd btn "goto"
  hide bkgnd btn "UnGoto"

  hide bkgnd btn "group"
  hide bkgnd btn "ungroup"
  hide bkgnd btn "move"
  hide bkgnd btn "unmove"
  hide bkgnd btn "delete"
  hide bkgnd btn "Undelete"

  hide bkgnd btn "duplicate"
  hide bkgnd btn "label"
  hide bkgnd btn "unlabel"
  hide bkgnd btn "viewby"
  put 0 into marks
  put "" into memory
  hide bkgnd btn "1"
  hide bkgnd btn "2"
  hide bkgnd btn "3"
  wait for 1 ticks
  put 1 into level
  if storage = "movie_clip" then go card Movie_Clip_Selected
  else if storage = "sound_only" then go card Sound_Only_Card
  else if storage = "continuous&sound" then go card Multi_Sound_Card
  else if storage = "SinglePhoto&Sound" then go card Photo_Sound_Card
  else if storage = "SinglePhoto" then go card Single_Photo_Card
  else if storage = "multiNoSound" then go card Multi_No_Sound_Card
  else if storage = "empty" then go card Last_Item_Card
end opencard
```



Inventions Summary by Priority FlashPoint Project

25 + 100

by Eric C. Anderson
System Architect
Image Capture Group

April 15 1996

Filed Patents

P1311: Focus Methods and Auto-Macro
P1366: Color Overlay for Focus Assist
P1369: Orientation Sensors in a Digital Camera
P1449: Interrupt System for a Multi-Threaded Digital Camera
P1450: Image Rotation Pre-Storage Process
P1560: Whole Way Scan AF
P1561: DMA Chaining Async Protocol
P1600: MultiMode ROM under SW control
P1439: Battery Utilization with a Flash
P1451: Background Spooling in a Digital Camera
P1873: Disk Icon Support for Power Failure
P2: Navigation in Image Sets (GUI) - *4NA/6AT/DN - Draft*
?????: SDRAM Mode Cycling UNKNOWN STATUS/IBM Joint Patent

AAA Inventions

Afer some thought, I believe the description below is a distinctive different approach to the design of a digital camera from anything else on the market. It is critical we file this ASAP. One issue is this: is the Sanyo/Epson camera or the NEC (John Moon's) camera doing this same thing? I believe that the Sanyo camera uses flash memory, and also uses a DSP to speed compression. I do not know about the NEC camera, but it seems to require a removable disk be installed in order to take pictures.

Unified Memory Digital Camera (Carr)

- The key invention is to utilize a single bank of battery-backed up (self-refresh) DRAM for multiple purposes, including frame buffer, image processing buffers, processor working memory, and a RAMDisk for storing temporary (raw) image files and processed and compressed image files. An optional removable storage disk is supported, and typically is a flash disk or rotating magnetic (hard) disk. This removable storage disk is also used for temporary storage of raw image data, as well as being used for storing compressed image files. The removable disk and the RAMDisk are accessed via standard DOS commands, and maintain a standard directory and FAT structure. Image processing is

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☐ **Other** _____

☒ **Other**

PAGE 2 OF EXHIBIT C

IS MISSING

P?: Method for Image File Naming to Resolve Conflicts

• A Numbering and Naming Method for Images Captured by a Digital Camera: This is a simple system for eliminating name conflicts in a digital camera, by using a counter to count the total images captured. This count is used as part of the image name. This number is stored in EEPROM memory to maintain its value accurately under all power conditions, including power failures. This also eliminates conflicts on this host when the files are uploaded, since each image captured has a unique name. [Eric Anderson, Mike Masukawa]

P?: Method for Image File System Organization and Folder Naming to Resolve Conflicts

• A Method for Managing Removable Media Used in Multiple Cameras: When one (expensive) removable storage device is shared between multiple cameras, problems can result due to file naming conflicts. This is eliminated by using a folder named in part with the camera serial number for the image files generated by a given camera. This ensures no conflict between cameras. This includes command set for accessing images from a given camera from the host. [Eric Anderson, Mike Masukawa]

Group Camera GUI

P1947: Adam GUI: Combining Icon and Image Pane for Grouping

• Method for Displaying Grouped Images: Each image or set of images which are grouped by the capture process (such as a burst, a time-lapse, etc) is displayed as a single image, along with one or more icons to indicate the type. Includes sound annotation, single image, sequence of images, movies, slide shows, presentations, panoramas, etc. [Eric Anderson]

P?: Adam GUI: Creating a Slide Show

• Method for Creating a Slide Show from a series of Images: This is a method for creating a series of slides using the "mark" function for the purpose of designating a sequential series of images. The group, once marked, can be deleted, moved, a soundtrack recorded to make a slide show/presentation, etc. Method provides for dynamic rearranging during the marking process. [Eric Anderson]

P?: Adam GUI: Realtime Capture of a Slide Show with Sound

• Method for Creating a Slide Show with Soundtrack in Real Time using a Digital Camera: This is a method for automatically creating a slide show in a single step. [Eric Anderson]

P?: Adam GUI: Sound Annotation Methodology



EXHIBIT D

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August 8, 1996

VIA FEDERAL EXPRESS

Eric C. Anderson
Apple Computer, Inc.
3585 Monroe Street, MS:68-IC
Santa Clara, CA 95051

Re: U.S. Patent Application
Your Reference No. P1969
Our Reference No. JAS 553P
Title: "A METHOD AND SYSTEM FOR GROUPING IMAGES IN A DIGITAL
CAMERA"

Dear Eric:

Please find attached a second draft of the above identified patent application including claims and informal drawings. Please carefully review the draft patent application to insure that the application, including the specification, claims and the hand drafted drawings, completely and accurately describe and claim your invention.

Please provide any additions or changes you may have directly on the corresponding pages and fax the pages back to me as soon as possible.

If you are aware of any additional or more pertinent prior art or other material information that should be called to the attention of the Patent Office, please insert reference to it directly on the draft application. Please do not hesitate to call should you have any questions or comments.

Very truly yours,

Stephen G. Sullivan

SGS\lm
Enclosure
APPLE\080896.LTR